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ANALYSIS OF METACOGNITION AND ITS RELATION WITH STUDY HABIT FOR EDUCATIONAL GROWTH IN MALE AND FEMALE STUDENTS

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Introduction

Present society is recognized as a society full of high competition and stress. "Students of all ages and genders are pressured to perform their best in academics."Complexities like inability of coping up to new demands of changing structure of social and academic life calls for understanding of self and own learning process. The knowledge of own learning process or 'knowledge beyond knowledge' is known a metacognition. It is knowledge of how one is learning beyond observable limits, prospects. "The term 'metacognition' was popularized by Flavell, referring to cognition about cognitive phenomena, or 'thinking about thinking." Metacognition will thus mean awareness, management and monitoring of own thought process. Students with high metacognitive power can develop study habits suiting best to them resulting better educational growth. Metacognition may have multiple sub areas like knowledge of individual weakness, mapping of concepts and ideas, modifying of skills in thinking, skimming or filtering of information etc. In present study the investigator adopted metacognitive abilities of planning, monitoring and evaluating as factors determining study habits among male and female students of undergraduate level.

The educational success of both male and female students is contingent upon their information processing style, which is determined by social and personal aspects such as metacognition. Study habits and other aspects of education have historically been greatly influenced by cultural norms and gender roles.Here are some factors to consider:

F Societal Expectations: Traditional gender roles may dictate certain expectations for males and females, influencing their educational choices. For example, there might be societal pressure for males to pursue careers in science or engineering and for females to focus on humanities or caregiving professions.

F Access to Education: In some regions, there may be disparities in access to education based on gender. Cultural norms or economic factors might limit educational opportunities

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for both male and female students.

F Gender Bias: Bias in educational materials, teaching methods, and assessment tools can affect both male and female students. Stereotypes regarding whether courses are more suited for a particular gender or the manner in which educators engage with their pupils are examples of this prejudice.

F Role Models: Both men and women may make different educational decisions depending on whether or not there are role models in a certain sector. One gender's lack of role models in a given profession may deter people from pursuing comparable jobs or educational pathways.

F Peer Influence: Peer pressure and social dynamics within schools can also contribute to gender differences in education. For example, certain subjects or activities may be perceived as more socially acceptable for one gender, influencing individual choices.

F Parental Expectations: Parental expectations can significantly shape a child's educational experience. Difference in parental encouragement or discouragement for male and female students impact their choices and aspirations.

F Curriculum Design: The design of educational curricula can either challenge or reinforce traditional gender norms. Inclusive and diverse curricula that highlight contributions from both genders can contribute to a more equitable educational experience.

F School Environment: The overall school environment, including the presence of gender-based discrimination or harassment, can impact the well-being and academic performance of students.

Addressing these factors requires a multi-faceted approach involving policymakers, educators, parents, and communities.In order to promote gender equality in education, it is necessary to dispel stereotypes, offer equal opportunities, and create a welcoming environment for all students. This can only be achieved by taking into account the differences in study habits and cognitive abilities between males and females, as well as gender-specific educational needs.

"Study habits refer to the overall practices students adopt to learn a topic." It maybe habit of day time study, night time study, studying while listening music, studying in peaceful environment etc. The concept of study habit is not narrow as it seemed to be as it combines nearly all other sub-concepts such as cognition, study attitude, study methods and study skills. This study tries to highlight the need of knowledge of own thought process for development of effective study habits. The difference that may exist in this process between male and female students is also considered to be significant element of the investigatory analysis.

OBJECTIVES:

Following objectives are taken up to carry forward the study-

1. To examine whether gender differences influence the metacognitive skills of undergraduate students."
2. To investigate the effect of gender on study habits of undergraduate students of study area.
3. To examine whether there is any relationship between metacognition and study habit of undergraduate students.

HYPOTHESIS:

The study will attempt to verify hypotheses mentioned as follows:

HO1: There is no significant difference in metacognitive skills between male and female undergraduate students."

HO2: There exist no significance difference among study habits of male and female undergraduate students.

Ha3: There is a significant relationship between metacognition and study habits of undergraduate students."

SIGNIFICANCE OF THE STUDY:

Every aspect related to learning has a significant place in teacher and students` life. In educational set up teacher can`t fit ideas into minds until the pupil is ready to accept the same. Here comes the role of his/ her cognition. The more the student is aware of his/ her cognition better are the chances of development of acceptability of learning experiences. This shape the patterns of how one learns, in other words study habits.

In the era of child centric education truly individualized education will only be possible if teaching is offered as per need that may root in psychological and emotional need based on gender. Male and female student may vary in metacognition and study habits. Considering the importance of these aspects this investigation is seen as significant. In addition, examining how gender influences metacognition and study habits is essential to recognizing and mitigating any inequalities between male and female students. By examining these variations, researchers can identify and address problems that can impede children's academic progress and general well-being on the basis of their sexual orientation. Few more points showing importance of the chosen topic are-

F Equality in Education: Recognizing and understanding gender-based differences is significant to promote equal opportunities in education. It allows educators, policymakers,

and researchers to develop strategies that ensure both male and female students have access to the important resources, opportunities, and support systems.

F Customizing Instructional Strategies: Distinct genders may react differently to different instructional strategies. Teachers can adjust their teaching strategies to better engage and assist every student by researching these distinctions. Better academic results and more productive learning opportunities may result from this.

F Tackling preconceptions and Bias: Educational experiences and results can be impacted by gender preconceptions and prejudices. By recognizing and dispelling these misconceptions, research on gender-based disparities contributes to the development of a more welcoming and encouraging learning environment where students are not restricted because of their gender.

F Educational Aspirations: Promoting diversity in educational opportunities requires an understanding of how gender affects students' opinions of their own skills. Students might be encouraged to select courses based on their interests and talents rather than fitting in with social expectations by addressing gender-related inequalities early on.

F Social and Emotional Development: Emotions can be experienced and expressed differently by boys and girls. Examining gender differences enables educators and parents to provide kids with individualized, needs-based social and emotional development assistance.

F Reducing Gender Gaps: Gender gaps in academic achievement, participation in certain subjects, and career choices often stem from psychological differences. A targeted approach to addressing these differences can contribute to closing these gaps and promoting more balanced environment.

In essence, gender-based disparities in metacognition and study habits can be studied in order to develop an educational system that is equitable, inclusive, and supportive of the different needs and capabilities of all students, regardless of gender.

METHODOLOGY:

Present study is carried out using descriptive survey method for gathering cross sectional data related to objectives.

Population and Sample

The population of present study comprises of Undergraduate students pursuing Bachelor of Arts Degree in Cotton University, Guwahati, Assam. 100 students (50 female and 50 male students) were selected as sample group following stratified random sampling method.

Tools Used

Following tools were applied in the study-

1. **Meta Cognitive Skills Scale (MCSS-GMS) by Prof. Madhu Gupta and Ms. Suman-** Meta-Cognitive Skills Scale developed and standardized by Prof. Madhu Gupta and Ms. Suman has 42 items divided into four dimensions- I.Planning Skill, II. Implementation Skill, III. Monitoring Skill, IV. Evaluation Skill under metacognition.

2. **Study Habits Inventory (SHI-PS)**-This inventorywas developed and standardized by M. N. Palsane and A. Sharma with 45 items divided into eight areas-I. Budgeting Time, II. Physical condition, III. Reading Ability, IV. Note taking, V. Learning Motivation, VI. Memory, VII. Taking Examination, VIII. Health.

Data Collection

The sample groups were contacted personally for obtaining responses for the items in tools and for getting additional information if any.

Statistical Techniques

The raw data were processed using statistical procedures such as Mean, Standard Deviation, Z test, and Correlation Tests in order to meet the objectives. Z test assisted in determining if the hypothesis was acceptable, while mean and standard deviation provided a foundation for comparison. Pearson`s Correlation was adopted to see relationship between metacognition and study habit.

RESULTS:

Following results and interpretations were drawn from the study,

Related to Objective 1

(To study whether differences in sex play a role in metacognitive skills of undergraduate students)

For the scale on metacognitive scale it was found that the mean score for male undergraduate students is 172.88 which and for female undergraduate students is 171.08. Both scores are within the range of 164-182 suggesting of having Above Average metacognitive skills as per interpretative norm of the scale. Here, it is seen that female score in the scale is comparatively lower than male score. When students were interviewed personally it came into light that male students showed a realistic idea of their progress as they took lesser time to reply on questions on weakness, strength, challenges faced in learning new topic.

The P value obtained from Z test was 0.59328. It is greater than Alpha value .05. The test shows that the null hypothesis can be accepted. Z value also indicates acceptance of hypothesis being found to lie between -1.96 to +1.96..This indicates that there is no significant difference in the metacognitive skills of male and female students.

Results attained from Z testfor testing the hypothesis formed for present objectives is presented in following table-

TABLE NO. 1

Z- Test for Means of Male and Female Undergraduate Students on Metacognitive Skills

z-Test: Two Sample for Means			z-Test: Two Sample for Means		
	126	133		140	147
Mean	173.8367	171.8571	Mean	169.8776	167.898
Known Variance	301.5363	371.6261	Known Variance	441.7159	511.8057
Observations	49	49	Observations	49	49
Hypothesized Mean Difference	0		Hypothesized Mean Difference	0	
Z	0.534089		z	0.534089	
P(Z<=z) one-tail	0.29664		P(Z<=z) one-tail	0.29664	
z Critical one-tail	1.644854		z Critical one-tail	1.644854	
P(Z<=z) two-tail	0.59328		P(Z<=z) two-tail	0.59328	
z Critical two-tail	1.959964		z Critical two-tail	1.959964	

Related to Objective 2

(To investigate the effect of gender on study habits of undergraduate students of study area)

The perceived performance of male undergraduate students on the study habits measure was lower compared to that of female students based on the scores. Male students scored 64.2 as mean score and female score was 65.02. Female study habit though seemed better in scale scores there were certain area where male performance was better e.g. in case of examination taking behaviour and budgeting of time.

Regarding acceptance or rejection of hypothesis, the p value attained from Z test is 0.731618.Given that it is higher than.05, the null hypothesis is accepted.It shows that there is no significant difference among study habits of male and female undergraduate students even though in many sub areas of study habits male and female undergraduate students differ in adopting a study habit. There is no discernible difference, however there are differences in some areas due to the unique traits of both genders being studied at a comparable educational level, facing essentially the same obstacles in handling the subject matter, and being in similar institutional learning environments, among other factors.

The outputs and values from application of Z test to second objective is presented in proceeding part.

TABLE- 2

Z Test for Study Habit Scores of Male and Female Undergraduate Students

z-Test: Two Sample for Means			z-Test: Two Sample for Means		
	45	68		91	114
Mean	64.40816	64.97959	Mean	65.55102	66.12245
Known Variance	74.87714	61.14122	Known Variance	47.4053	33.66938
Observations	49	49	Observations	49	49
Hypothesized Mean Difference	0		Hypothesized Mean Difference	0	
Z	-0.34297		z	-0.34297	
P(Z<=z) one-tail	0.365809		P(Z<=z) one-tail	0.365809	
z Critical one-tail	1.644854		z Critical one-tail	1.644854	
P(Z<=z) two-tail	0.731618		P(Z<=z) two-tail	0.731618	
z Critical two-tail	1.959964		z Critical two-tail	1.959964	

Related to Objective 3

(To examine whether there is any relationship between metacognition and study habit of undergraduate students)

Pearson`s Product Moment Correlation of Co efficient was calculated to test relationship between metacognition and study habits of undergraduate students. The table

no.3 shows the results-

TABLE 3

Pearson`s Product Moment Correlation of Co-efficient (Metacognition and Study Habit)

	Scores on Study Habit	Scores on Metacognition
Scores on Study Habit	1	0.12
Scores on Metacognition	0.12	1

The correlation co-efficient attained was 0. 12; r=0. 12. Positive correlation between metacognition and study habit was observed from test score analysis. Regression Analysis was performed to test acceptability of the hypothesis developed for this objective. The findings are shown in Table No. 4.

TABLE 4

Regression Analysis of Metacognition Skill Scale Scores and Study Habit Inventory Scale Score

Regression Statistics						
Multiple R	0.126363					
R Square	0.015968					
Adjusted R Square	0.005927					
Standard Error	8.196609					
Observations	100					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	1	106.8385	106.8385	1.590228	0.210287	
Residual	98	6584.071	67.1844			
Total	99	6690.91				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	54.88718	7.690512	7.136999	1.67E-10	39.62561	70.14875
Metacognition	0.056102	0.044489	1.261043	0.210287	-0.03218	0.144388

P value attained is 0.210287 which is bigger than alpha value .05, hence the alternative hypothesis is rejected at 95% level of significance. This indicate that the correlation between metacognition and study habit is not statistically significant.

DISCUSSION:

The results of this study demonstrated that the study habits and metacognitive abilities of male and female students vary. Gender influences human behaviour and development in a similar manner as effective study habits advance learning. It is also possible to state that a person's self-perception, attitude toward learning, and regulation of that learning are crucial aspects of the teaching and learning process. The results of the study demonstrated a favourable association between study habits and metacognition. Understanding the importance of allowing students to see how they think and encouraging them to do so may undoubtedly benefit instructors. This study shows that by encouraging metacognitive skills, effective study habits can be fostered, leading to greater educational growth.Awareness of Metacognition impacts the way one thinks, sets cognitive goals or tasks, plans for success and implement the same with a focus on mind. This helps to modify previous learning goals on the basis of own capability. It is just like experiences of puzzlement or failure where one can have any of these aspects. Metacognitive experiences can affect one's metacognitive knowledge store by adding to it, deleting from it, or revising it, as in Piaget's model of assimilation and accommodation in his theory of cognitive development. An idea for the development of metacognitive abilities through teacher intervention may be found in Harris & Graham's (1996) Self-Regulated Strategy Development (SRSD) paradigm. To implement this strategy emphasis must be given at students` learning i.e. when, where, and how to apply learning strategies and teachers scaffold instruction so students own their learning process as soon as possible.

CONCLUSION:

Anything that includes students executing tasks and reflecting on their actions can be categorized as active learning. Any kind of study habit only means that you are an engaged student. In addition to study habits, metacognitive skills like self-regulation, monitoring, and reflection are necessary for active learning. However, in the modern educational environment, the assumption that students can fully absorb and understand new information without engaging in active inquiry or any other type of active management of response to the data to be learned makes traditional passive learning environments, like lectures, questionable. Instead, students are asked to simply listen and take notes. Students are no longer passive listeners, as evidenced by the majority of students in the current research having above average metacognitive skills. If used as the cornerstone for instructional

planning throughout the whole educational process, this shift in the cognitive domain and growing awareness of one's own cognition will motivate both instructors and students.This will further develop mutual trust between teacher-taught and effective psychological climate in any institution. By placing an emphasis on induction, experimentation, knowledge construction, self-learning, self-awareness longer lasting recall and more productive thinking and study habits can be developed. All these can be possible if educators focus more on how students learn along with how are they teaching.

The present investigation aims to explore many aspects of metacognition development, the notion of a good study habit, the disparity in academic accomplishment between genders due to potential differences in metacognition and study habits, and related topics. A teacher can teach only his/ her students are mentally ready to learn and metacognition is the way a student tries to know how and what he is learning. This process of getting awareness of metacognitive skills in development of best suited study habit must go on a collaborative way where the educator will help learner in best possible way to learn for himself.

All stakeholders must identify the areas that need extra care for male and female students in order to eliminate gender disparities in education and develop plans for inclusive classrooms. This can promote equality and ensurea balanced and diverse education system and will bring together a variety of perspectives, ideas, and talents, fostering creativity and innovation creating a more inclusive, enlightened, and progressive society.

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